Asset Management System (AMS)

Scope of Work

Hawaii Department of Transportation

Harbors Division

May 8, 2015

I. PROJECT SUMMARY

In November 2014, Hawaii Department of Transportation (DOT), Harbors Division, has entered into a Consent Decree (CD) with the United State Environmental Protection Agency (EPA) and Hawaii Department of Health (DOH) to settle pending litigation for alleged Clean Water Action violations. The HDOT Harbors Division is required to develop and maintain a Geographic Information System (GIS) -based Asset Management System (AMS).

As described in the CD, this AMS "shall include an inventory of HDOT assets, a schedule for recurring inspection, cleaning, other maintenance, and renewal. The Asset Management System shall be capable of generating and tracking work orders for inspection, cleaning, other maintenance, and shall be capable of assisting HDOT with prioritization of capital improvement projects." The AMS shall be fully implemented not later than December 31, 2015.

II. SCOPE OF WORK

The scope of work is to provide software and configuration services for an AMS, a commercial off the shelf (COTS) software solution with an ESRI GIS interface to enable staff to track and manage Harbors storm water infrastructure assets (e.g., storm water drain system inspections & cleanings) and Harbors Small Municipal Separate Storm Sewer System (MS4) permits compliance (e.g., assisting inspections, collecting data, and generating reports in preparation of annual compliance reports) through a centralized database.

The AMS will be web-based and hosted by the vendor. The users of the system will be at Harbors offices on Oahu, Hawaii. The AMS will integrate with Harbors' existing ESRI GIS data currently managed in ARC GIS Desktop and hosted with ArcGIS Online. To comply with the demands of the EPA/DOH Consent Decree and its timeline of requirements, the initial focus of the AMS will be on Harbors assets related to storm water management, and other consent decree requirements. Future phase may address expanding the use of the AMS for other asset types and operational processes, and expanding to the users at Harbors offices on other islands (e.g., Maui, Kaui, Hawaii).

To be specific, this AMS will be able to manage Harbors storm drain system assets (i.e. inlets, manholes, pipes, above-ground drainage features, post-construction control measures, and outfall), drain inspection & cleaning, best management practices (BMP) inspections associated with construction and post-construction projects, and tenant/outfall inspections. The AMS will also be capable of generating schedules and tracking work orders for drain inspections and cleaning, and capital improvement projects as well as risk assessments of "hot spots." The scope will include workflow analyses of Harbors processes associated with managing the assets related to storm water management, implementation of the AMS, integration of Harbors GIS data with the AMS, and training of Harbors staff.

Software licenses and maintenance required for Harbors staff of 50 users will be provided by the vendor.

II.1 Scope of Application Functions and Requirements

II.1.1 Asset Inventory Requirements

The AMS system will include an asset inventory database that is integrated with the Harbors ESRI GIS data to populate asset inventory data. The AMS will provide:

- Integration with ESRI ArcGIS Online via REST services.
- One directional syncing of additions and changes made to asset data in ESRI ArcGIS Online with AMS asset database.
- Following asset types and attributes (GIS attributes for each asset type are listed in Appendix C - *DOT Harbors GIS Data Dictionary*):
    - Signs
    - Illicit Discharges
    - Permanent BMPs
    - Temporary BMPs
    - SD Inlets
    - SD Open Lines (trench drains)
    - SD Lines
    - SD Junctions (manholes)
    - SD Discharges (outfalls)
    - SD Fittings (misc.)
    - Lease/Permits (lands/buildings) for environmental inspection purposes only

II.1.2 Leases/Permits/Tenant Requirements

The AMS will include a database for lease and revocable permit information with links to asset inventory (e.g., lands, buildings) and tenant records. This data will be stored in the AMS separate from asset inventory data and will be maintained directly in the AMS.

The AMS will maintain an electronic inventory of Tenants. This inventory will include issued leases/permits, a contact information for each Tenant, facility/office location, a description of the nature of business activity, and whether the Tenant maintains coverage under the Industrial General Storm Water Permit (Industrial General Permit) issued by DOH. The AMS will replace the current DOT Harbors tenant database in Microsoft Access.

II.1.3 Inspections & Work Orders Requirements

The AMS will provide capability to schedule and record inspections required by the consent decree based on the following forms. (Sample forms are included in Appendix A)

List of Sample Forms:

Item	Form	Description/Purpose	No. of Pages (8.5 x 11)	Type of Form (Input/Output)	Users/Other Remarks
1	Stormwater Hotline Occurrence Tracking (SHOT) Form	To document/record certain occurrences such as information requests, discharge reporting, complaints & commendations.	2	Input	Harbors District & Engineering personnel
2	Suspected Illicit Discharge Reporting Form	To report suspected illicit discharges.	1	Input	Harbors personnel
3	Leaking Pipe Reporting Form	To report leaking pipes of any type.	2	Input	Includes instructions & routing through Harbors components to DEP-H
4	Notification List for Oil Spills & Illicit Discharges	Records date & time of notification actions for oil spills & illicit discharges to USCG, DOH, Harbor Police, HAR-OC, MCS & HAR-EE.	1	Input	Harbor Traffic Control, (HAR-OCT)
5	Outfall Reconnaissance Inventory Form	To document outfall description, quantitative characterization & various physical indicators.	2	Input	Completed by HAR-EE consultants
6	Environmental Compliance, BMP, and P2 Inspection Checklist for Tenant	To document tenant inspection findings and generate risk ranking for tenant with frequency of future inspections.	6	Input	HAR-EE and consultants
7	Low-Risk Tenant Reconnaissance Inspection Form	To document inspection findings for low risk tenants	1	Input	HAR-EE and consultants
8	Construction Site Design Review Checklist	To document stormwater pollutation prevention provisions at proposed project construction sites	4	Input	HAR-EE
9	Construction Site BMP Inspection Checklist	To document findings of construction BMP inspection.	2	Input	HAR-EE and consultants
10	Permanent Post-Construction BMP Plan Checklist	To document review of post-construction BMP plan	2	Input	HAR-EE
11	Notification Form for Project Sites Disturbing Less Than One Acre	To document general information of a project disturbing less than one acre	3	Input	HAR-EE

Item	Form	Description/Purpose	No. of Pages (8.5 x 11)	Type of Form (Input/Output)	Users/Other Remarks
12	Wash Application Review Checklist	To document review of proposed vehicle/equipment wash rack procedures, products to be used & records keeping.	1	Input	HAR-EE
13	Permit for Connection to the State Harbors Drainage System	To apply for permission to connect to the Harbors small MS4 system.	3	Input	Harbors tenant
14	Permit to Discharge to the State Harbors Drainage System	To apply for permission to discharge to the Harbors small MS4 system.	3	Input	Harbors tenant
15	Storm Drain Inspection and Cleaning - Inlets	To document drain inlet inspection and cleaning.	1	Input	Oahu District Maintenance
16	Storm Drain Inspection and Cleaning - Open Channels	To document open channel inspection and cleaning.	1	Input	Oahu District Maintenance
17	Work Order	To create a work order.	1	Input	Oahu District Maintenance

The AMS will:

a. Generate and track work orders for inspection, cleaning, and other maintenance of Harbors storm drainage assets.
b. Track physical conditions of Harbors storm drainage assets.
c. Manage inspection work orders, scheduling, work flows results, etc.
d. Be able to provide templates for inspection and cleaning work orders, and allow for flexible templates to adapt to management and inspections of storm water assets and tenant related information.
e. Manage information attributes associated with a particular asset (by asset name and/or location) including asset profile (e.g. pipe size, physical condition), inspection reports, work orders, and current tenant information.
f. Track and manage BMP associated with Harbors/Tenant projects as required.
g. Be able to provide templates for spill reporting.
h. Generate notification or reminder for pending actions

II.1.4 Reporting Requirements

The AMS system will produce the following reports required for the Annual Compliance Report. (Sample of these reports are included in Appendix B.) Reports will be in pdf, MS Word, and HTML formats. Data will also be capable of being exported in excel and/or CSV.

1. Tenant Inspection Summary and Risk Ranking

2. Tenant Illicit Discharge Investigations
3. SHOT Form IDDE Investigations
4. Outfall Prioritization Summary
5. Active Construction Projects Inventory and Inspection
6. Construction Plan Review Summary
7. Permanent BMP Plan Review and Inventory
8. Tenant Inventory
9. Inspections and Cleaning Activity for Inlets and Open Channels

Note that NO JAVA SCRIPT AND PLUGIN ARE ALLOWED FOR THE END USERS.

II.1.5 Technical Requirements

1. ESRI GIS data compatible
2. Integrate with Harbors existing ESRI GIS data that is available on ArcGIS Online
3. Software is able to export data to Microsoft Excel or Access databases
4. Software supports mobile apps for IOS, Windows, and Android
5. Photos can be uploaded from mobile devices
6. Provide required special software for editing if needed
7. QC/QA system capable
8. Software is scalable with hardware load balancing and flexible for growth
9. Capable of adding additional software modules to the system

II.1.6 Geographic Information System (GIS)/AMS Integration Requirements

1. Capable of connecting with existing Harbors GIS data that is currently being hosted by ESRI ArcGIS Online feature map services (Representational State Transfer “REST” services).
2. The AMS will also be capable of integrating uploaded GIS data in geodatabase or shapefile format.
3. The AMS will provide a documentation of the AMS features, data structure, and workflows.
4. The base map display will be configurable by users.
5. Interactive (zoom/pan) asset map capability and map printing capability.
6. Ability to accommodate periodic GIS data updates for viewing and reporting in AMS.
7. Ability to search and select assets from map interface by any attribute (e.g., tenant name).
8. AMS has ability to adapt to enhancements or upgrades of ESRI ArcGIS online software for continuous functionality for Harbors.
9. The AMS should be scalable and include the capability to expand to other harbors (locations) and include additional assets in the future.
10. Must have a proven track record that supports open industry standards in hardware and software that allows for information to be distributed between the proposed AMS system

and existing system (ESRI ArcGIS Online feature services and web maps). The system must have the ability to seamlessly move between systems.

II.1.7 Implementation and Training Requirements

II.1.7.1 Project Management

The Contractor must identify a project manager (PM) and other key individuals in the Contractor's organization who will be interfacing with the DOT Harbors (OWNER) PM and project team during this project. Include resumes of all identified key project personnel with this Proposal. When reviewing the resumes, DOT Harbors PM will determine if the proposed Contractor personnel has, in the Owner's opinion, the relevant subject industry experience to manage and complete the project. If prior to the start or during the project the Contractor personnel, included in the Contractor proposal, are no longer available to the project, the OWNER reserves the right to interview and accept/reject the Contractor's candidates.

II.1.7.2 Project Implementation Schedule

The Contractor must provide a project implementation schedule including milestones, meetings, tasks (at a minimum to include; software installation, data conversion, training, testing), responsibility, and duration in person days. Provide a narrative of each task as it relates to the project. Be sure to include tasks the Contractor expects DOT Harbors Division to perform. A final project implementation plan will be mutually agreed upon between the successful Contractor and DOT Harbors Division when the Contractor is selected.

II.1.7.3 Product Delivery and Installation

The Contractor will assume responsibility for installation of all software Product(s) that the Contractor includes as part of their proposed solution. The Contractor will meet with a representative of the DOT Harbors group prior to installation of the software products to ensure that the site meets the Contractor's written minimum site requirements included in the Contractors proposal. The Contractor is responsible for all costs associated with shipment or transfer of the Contractor's Product(s) and documentation materials. The Contractor must ensure that all Product(s) are properly packaged for shipment.

II.1.7.4 Acceptance Testing

The Contractor will certify in writing to DOT Harbors when the software is installed/configured and ready for testing. Unless DOT Harbors sends the Contractor written notification within 90 days of installation of the software Product(s) that the Product(s) do not operate in accordance with the functionality documented in the Contractor's Proposal in response to the Scope Of Work and demonstrated at the Product(s) presentation by the Contractor, shall be deemed to be accepted. If DOT Harbors Division determines that the Product(s) do not perform in accordance

with the criteria as set, DOT Harbors Division will notify the contractor in writing of the specific discrepancies. If these discrepancies are not resolved in 45 days to DOT Harbors Division satisfaction, Harbors has the option of terminating the Contract, returning the Product(s), and receiving a total refund for all monies spent with the contract.

II.1.7.5 Training

1. A designated trainer from each application area will be trained on the use and administration of the system. The trainer will be responsible for training the rest of the users within their application area.

2. All training will be held on site at DOT Harbors Office at 79 South Nimitz Highway, Honolulu, Hawaii. The training dates and times will be coordinated and agreed upon with the Harbors PM a minimum of 21 days before the proposed training dates. Training will be geared to make users proficient in the software and capable of entering, retrieving, querying, reporting, and using information in the AMS. All documentation for the training will be provided by the Contractor in both paper and electronic PDF formats. The Contractor will provide on-site training of Harbors staff with a minimum of three separate sessions. The Harbors PM will provide the class roster for each of the scheduled training sessions.

3. User training will be provided for 30 users at Harbors Office in Honolulu. The User training be a minimum of 6 hours and a maximum of 8 hours. The user training class will be conducted with a maximum class size of 12 people. The user training will cover:
   (1) AMS capabilities and functions
   (2) Use of mobile devices with the AMS
   (3) Performing storm drain and tenant inspections using the AMS
   (4) Uploading photos and descriptions
   (5) Performing queries and searches
   (6) Consolidating information from the AMS to produce reports in preparation of annual reports
   (7) Entering reporting information (e.g., information collected during inspection or site visit) into the AMS

4. Power User training for Harbors employees requiring higher level access to the AMS will be provided for 6 to 8 users at Harbors Office in Honolulu. The Power user training will be a minimum of 14 hours and a maximum of 24 hours and will cover.
   (1) User training
   (2) How to edit or change data fields for assets that will be tracked in the AMS
   (3) How to create and edit forms/reports
   (4) Other AMS functions above those needed by the regular, day-to-day users of the system

5. Administrator training for 3 to 5 individuals at Harbors Office in Honolulu. The administrator training will be a minimum of 8 hours and a maximum of 16 hours. Documentation will be provided with the Administrator training in electronic format will cover:
   (1) Managing permissions and adding users of the AMS
   (2) Managing, updating, and adding data in the AMS
   (3) Customizing the interface and forms
   (4) Exporting data from the AMS
   (5) Integrating the AMS with existing ESRI GIS data services
   (6) Implementing internal security controls and preparing for audits.
   (7) Identifying and analyzing maintenance problems so that the Harbors AMS administrator knows how and when to contact technical support for assistance

II.1.7.6 Cutover

1. The completed and tested software will be installed by the vendor and appropriate security access will be configured.
2. The DOT project managers will coordinate the DOT staff for cutting over to the production system.
3. Provide and maintain a test/training environment

II.1.7.7 Post Implementation

1. Provide local, Hawaii-based technical support resources on an as-needed basis
2. The Contractor shall perform on-going maintenance support as well as respond to and perform services to resolve asset management system malfunction or system failure. (If upgrades to AMS or GIS software will require that the system be taken temporarily offline, the Contractor will provide 48 hours prior written notification to Harbors PM and AMS system administrator. Downtime shall be no longer than one week.) A system malfunction shall be defined as the inability to input, update, and process appropriate data into the AMS system or to retrieve data and reports from the AMS system in the required manner. Maintenance support services shall include keeping all AMS application, middleware, Relational Database Management System, operating system, anti-virus, and firewall software licenses updated and current and assisting the Harbors Division in the following areas under the contract:

II.1.8 Contractor Qualifications/Requirements

1. ESRI Platinum Partner
2. Prior experience with ERSI GIS integration

APPENDIX A

Sample Forms

APPENDIX B

Sample Reports

APPENDIX C

DOT Harbors GIS Data Dictionary